

## Questions about steam measurement and industrial boilers

**Objective:** Workgroup members will prepare papers responding to the following four sets of questions related to steam measurement.

### *1. Steam measurement equipment issues:*

What percentage of industrial units measure steam output?

Do most industrial units measure pressure and temperature as part of measuring steam output?

Where is steam measured from industrial boilers?

Is the accuracy of steam (thermal) output measurement comparable to that of electricity? (1 to 2% of full scale)

What quality assurance procedures do plants use to ensure the accuracy of steam measurements?

Are there standards that apply to measurement of steam, including quality assurance procedures? (For example, ASME or ANSI standards)

If so, are these standards widely used by industry?

### *2. Net vs. gross steam output*

Are steam output measurements for an industrial unit usually on a gross basis, a net basis, both, or neither?

Is there an equivalent of net electricity for an industrial boiler? (That is, an output that is sold by the company.) If so, what is it?

How would an industrial plant determine or measure net output for a unit?

### *3. Commercial value of steam*

How is steam or thermal energy useful in industrial processes?

How is steam or thermal energy used within a plant?

How do industrial plants recover the cost of generating steam or thermal energy?

Do industrial plants sell thermal energy?

### *4. Appropriateness of comparing and converting steam and electric output*

Should steam output be converted to electrical output? If so, which method should be used to convert steam energy to electrical power equivalent? If steam energy were not converted, how could emission limitations be treated for cogenerators?

How can steam be treated equitably for industrial boilers and cogenerators?

What assumptions, if any, should be made about the efficiency of conversion from steam output to electrical output?

If steam output data were not available from industrial boilers, how would States allocate allowances to cogenerators?